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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,054	10/15/2001	Nordine Cheikh	16517.256/38-21(15094)C	3580

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EXAMINER

ALLEN, MARIANNE P

ART UNIT PAPER NUMBER

1647

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/976,054	Applicant(s) CHEIKH ET AL.	
	Examiner Marianne P. Allen	Art Unit 1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 12-25 is/are pending in the application.
- 4a) Of the above claim(s) 20-25 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-17 is/are allowed.
- 6) ☒ Claim(s) 1, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1 and 12-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/21/2006 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

Newly submitted claims 20-25 are directed to an invention that is independent or distinct from the invention originally elected. The restriction requirement set forth on 10/7/2002 set forth Group IV directed to transgenic plants, classified in Class 800, subclass 295. New claims 20-25 correspond to this group. Applicant elected the nucleic acid molecule product claims with traverse in the response submitted 11/13/2002. The restriction requirement was made final in the Office action dated 12/19/2002.

Accordingly, claims 20-25 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 1 and 12-19 are under consideration by the examiner.

Claim Rejections - 35 USC § 112

Claims 1 and 18-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement and with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention as well as subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This is both a written description and an enablement rejection.

Claims 1 and 18-19 as written require that the nucleic acid molecule encode the entirety, and not a portion, of a maize adenine phosphoribosyl transferase comprising SEQ ID NO: 5 (claim 1) or which specifically hybridizes to a nucleic acid that comprises SEQ ID NO: 5 (claim 18).

As set forth in the prior Office action, SEQ ID NO: 5 does not encode a complete adenine phosphoribosyltransferase from *Zea mays* or maize. SEQ ID NO: 5 is a 440 nucleotide sequence isolated from *Zea mays* or maize. At least 40 nucleotide positions are undefined (n). Table A on page 208 of the specification identifies SEQ ID NO: 5 as a maize adenine phosphoribosyl transferase. SEQ ID NO: 5 is disclosed as having sequence similarity to NCBI GI 726304. GI 726304 corresponds to Accession No. U22442. This sequence is from *Triticum aestivum* (bread wheat). The length of this sequence is 845 nucleotides and the coding region is identified as being from nucleotides 48-593. The sequence encodes an adenine phosphoribosyltransferase.

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Alignment of SEQ ID NO: 5 with this sequence shows a query match of 28% and best local similarity of 66%.

The wheat sequence is 181 amino acids in length and the Arabidopsis sequence is 183 amino acids in length. In view of the nucleotide in SEQ ID NO: 5 that would result in a frame shift (see Office action dated 10/3/05), SEQ ID NO: 5 can only be considered to encode approximately 59 amino acids of the maize adenine phosphoribosyl transferase.

Based on the information in the specification and the lack of information about the nucleic acid sequence encoding the maize adenine phosphoribosyl transferase in the prior art, one of ordinary skill in the art would not have been able to envision the nucleic acid molecules encoding the complete enzyme. The nucleic acid molecule of claim 1 is not completely described by the specification and one of ordinary skill in the art could not make and use what is not described.

Claims 18-19 contain limitations to hybridization and complements. The specification on page 37 defines "complement" as fully complementary. Furthermore, the specification defines "specifically hybridizing" on page 37 to be if the two molecules are capable of forming anti-parallel, double-stranded nucleic acid structure. As written, the claims require a sequence that encodes the entire enzyme. These claims are not adequately described. One of ordinary skill in the art would not be able to envision the nucleic acid molecules that would have these properties based on the disclosure in the specification and what was known in the prior art. As set forth in the prior Office actions, adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. One of ordinary skill in the art could not make and use what is not described.

The specification does not adequately describe the structure of approximately 2/3 of the nucleotide sequence encoding the maize protein. Of the portion that is provided, the sequence provided does not encode all of the completely conserved positions for this family or even the two members known at the time of the invention. (See Xing et al.) Nor does one of ordinary skill in the art know what portions of the sequence provide the structure that would make the structure identifiable as being from maize rather than another plant. For example, Figure 2 of Xing et al. shows that the rice (*O. sativa*) sequence is the only one that has valine at the position equivalent to amino acid 81 of the rice sequence. It is unknown what sequence characteristics are unique to the complete maize sequence. In particular, the added nucleotide that would cause a frame shift that is present in SEQ ID NO: 5 makes it entirely unclear what the C-terminus of the protein would look like (and thus the nucleic acid that would encode it). Note that if SEQ ID NO: 5 is translated as presented, none of the conserved positions shown in the alignment presented within the prior Office action following the marked position are found as a completely different C-terminus would be produced. The specification does not adequately describe the claimed nucleic acid molecules encoding the complete protein for maize.

It is further noted that inclusion of the term “maize” in claims 1 and 18 is interpreted to mean that the claimed nucleic acid molecule is a naturally occurring sequence found in maize. As such, the presence of the undefined positions (n) in SEQ ID NO: 5 are considered to embrace non-naturally occurring forms absent evidence that all of the polymorphisms embraced by these undefined positions are naturally occurring in maize. Particularly with respect to claim 18, the specification does not disclose any other naturally occurring adenine phosphoribosyl transferase sequences in maize that would hybridize as set forth in the claim. Sequences from other species

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or non-naturally occurring sequences are not considered to be embraced by the claims. Should applicant traverse this interpretation of the claims, they are required to point to the portion of the specification that defines or delimits sequences (by structure, degree of similarity, and so forth) that are considered to belong to the maize family. That is, pointing to the disclosure that informs one of ordinary skill in the art what is included in the maize family of sequences and what sequences are excluded by it.

In view of this information, particularly the degree of amino acid sequence similarity between the wheat and Arabidopsis sequences known in the prior art, one of ordinary skill in the art would not have doubted that SEQ ID NO: 5 encoded part of a maize adenine phosphoribosyl transferase. However, it is clear that SEQ ID NO: 5 does not encode the complete sequence for the maize adenine phosphoribosyl transferase. The wheat sequence is 181 amino acids in length and the Arabidopsis sequence is 183 amino acids in length. In view of the nucleotide in SEQ ID NO: 5 that would result in a frame shift, SEQ ID NO: 5 can only be considered to encode approximately 59 amino acids of the maize adenine phosphoribosyl transferase. A nucleic acid sequence comprising SEQ ID NO: 5 or its full complement would be useful as a probe to isolate the full length sequence.

Applicant's arguments are not persuasive. They do not address the facts set forth above concerning the incomplete sequence and those features of the complete sequence that are unique or particular to maize.

Conclusion

Claims 12-17 are allowable. A nucleic acid sequence comprising SEQ ID NO: 5 or its full complement or sequences with greater than 90% sequence identity to either of them would have been useful as a probe to isolate the full length maize sequence.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne P. Allen whose telephone number is 571-272-0712. The examiner can normally be reached on Monday-Friday, 5:30 am - 2:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marianne P. Allen

Marianne P. Allen
Primary Examiner
Art Unit 1647

9/20/2006

mpa